What is claimed is:

1. An antenna-coupled microbolometer multilayer structure comprising:

a dielectric layer of dielectric material having at least one locally doped region doped with a dopant to provide a thermal conductive path from a first side to a second side of the dielectric layer;

an antenna on the first side of the dielectric layer coupled to the locally doped region;

a read-out integrated circuit (ROIC) on the second side of the dielectric layer coupled to the locally doped region;

a conductive substrate between the dielectric layer and the ROIC; and

an electrical connection between the locally doped region and the ROIC, wherein the ROIC is connected to detect, via the electrical connection, a change in electrical resistivity of the locally doped region due to thermal energy absorbed from the antenna.

2. The structure of claim 1, wherein the dielectric material is barium strontium titanate.

3. The structure of claim 1, wherein the dopant is silicon carbide.

4. The structure of claim 1, wherein the dopant is lattice matched to the dielectric material.

5. The structure of claim 1, wherein the antenna is a patch antenna.

6. The structure of claim 1, wherein the dielectric layer, the antenna, the ROIC, and the substrate are integrated along a common axis.

7. The structure of claim 2, wherein the dopant is silicon carbide.

8. The structure of claim 7, wherein the dielectric layer, the antenna, the ROIC, and the substrate are integrated along a common axis.

9. A method of forming an antenna-coupled microbolometer multilayer structure, the method comprising:

depositing a layer of a dielectric material on a first side of a conductive substrate;

forming a locally doped region in the layer of dielectric material;

removing at least a portion of the conductive substrate and the layer;

placing electrical probes in proximity to the locally doped region;

thermally coupling an antenna to the dielectric material; and

electrically coupling a read-out integrated circuit (ROIC) to the electrical probes.

10. The method of claim 9, wherein removing includes use of laser ablation, etching, chemical or physical removal techniques.

11. The method of claim 9, wherein the electrical probes as formed by using metallization techniques or by inserting electrically conductive wires.

12. A method of forming the antenna-coupled microbolometer multilayer structure of claim 9, comprising:

a series of deposition and etch processes in which the dielectric layer of dielectric material is deposited on a first side of a conductive substrate, at least a portion of the conductive substrate and the dielectric layer is removed, and electrical probes correlating to the locally doped region of the dielectric material layer are formed.

13. The method of claim 12, wherein the method is performed in a unitary process in a reaction chamber.

14. The method of claim 12, comprising thermally coupling an antenna to the dielectric material and electrically coupling a ROIC to the electrical probes.

15. The method of claim 12, wherein the dielectric material possesses a high permittivity.

16. The method of claim 15, wherein the dielectric material is barium strontium titanate and the dopant is silicon carbide.